Addendum Sheet: In-Sight® 7000 Series Vision System Installation Manual

The In-Sight® 7000 series vision system now includes color models. This addendum includes hardware specifications to support color models, along with updates and corrections to existing regulations/conformity, precautions and Power and I/O Breakout cable specifications. This information will be included in the next revision of the *In-Sight® 7000 Series Vision System Installation Manual* and *In-Sight® 7000 Series Vision System Quick Start Guide*. Please keep this addendum with your installation manual or quick start guide.

Regulations/Conformity

Note: For the most up-to-date regulations and conformity information, please refer to the In-Sight online support site: http://www.cognex.com/Support/InSight.

Declaration of Conformity	
Manufacturer	Cognex Corporation One Vision Drive Natick, MA 01760 USA
Declares this CE-marked Machine Vision System Product	
Product	In-Sight 7010/7010C/7020/7050: Regulatory Model 1AAA In-Sight 7200/7200C/7210/7230: Regulatory Model 1AAA In-Sight 7400/7400C/7410/7430: Regulatory Model 1AAA In-Sight 7402/7402C/7412/7432: Regulatory Model 1AAA
Complies With	2004/108/EC Electromagnetic Compatibility Directive
Compliance Standards	EN 55022:2006 +A1:2007 Class A EN 61000-6-2:2005 EN 61000-3-2:2006+A1:2009+A2:2009 EN 61000-3-3:2008
European Representative	COGNEX INTERNATIONAL Immeuble “Le Patio” 104 Avenue Albert 1er 92563 Rueil Malmaison Cedex - France
Safety and Regulatory	
FCC	FCC Part 15, Class A This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference; and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.
KCC	In-Sight 7010/7010C/7020/7050: Regulatory Model 1AAA KCC-REM-CGX-1AAA In-Sight 7200/7200C/7210/7230: Regulatory Model 1AAA KCC-REM-CGX-1AAA In-Sight 7400/7400C/7410/7430: Regulatory Model 1AAA KCC-REM-CGX-1AAA In-Sight 7402/7402C/7412/7432: Regulatory Model 1AAA KCC-REM-CGX-1AAA
NRTL	TÜV SÜD AM SCC/NRTL OSHA Scheme for UL/CAN 60950-1. Regulatory Model 1AAA.
CB	TÜV SÜD AM, IEC/EN 60950-1. CB report available upon request.
RoHS	RoHS 6 Compliant.

Precautions

Observe these precautions when installing the vision system to reduce the risk of injury or equipment damage:

- The In-Sight vision system is intended to be supplied by a UL or NRTL listed power supply with a 24VDC output rated for at least 2A continuous and a maximum short circuit current rating of less than 8A and a maximum power rating of less than 100VA and marked Class 2 or Limited Power Source (LPS). Any other voltage creates a risk of fire or shock and can damage the components. Applicable national and local wiring standards and rules must be followed.
- According to IEC 62471, the white ring light is in Risk Group 1; it is not recommended to stare directly into the illumination LEDs when the vision system is receiving power. According to IEC 62471, the blue ring light is in Risk Group 2; CAUTION – Possibly hazardous optical radiation emitted from this product. Do not stare at operating light. May be harmful to the eyes. The green ring light, the red ring light and the Infrared (IR) ring light are Exempt Group products, therefore no precautions are required.
- Do not install In-Sight vision systems where they are directly exposed to environmental hazards such as excessive heat, dust, moisture, humidity, impact, vibration, corrosive substances, flammable substances, or static electricity.
- To reduce the risk of damage or malfunction due to over-voltage, line noise, electrostatic discharge (ESD), power surges, or other irregularities in the power supply, route all cables and wires away from high-voltage power sources.
- Do not expose the image sensor to laser light; image sensors can be damaged by direct, or reflected, laser light. If your application requires the use of laser light that may strike the image sensor, a lens filter at the corresponding laser's wavelength is recommended. Contact your local integrator or application engineer for suggestions.
- The In-Sight vision system does not contain user-serviceable parts. Do not make electrical or mechanical modifications to In-Sight vision system components. Unauthorized modifications may void your warranty.
- Changes or modifications not expressly approved by the party responsible for regulatory compliance could void the user’s authority to operate the equipment.
- Service loops should be included with all cable connections.
- Cable shielding can be degraded or cables can be damaged or wear out more quickly if a bend radius or service loop is tighter than 10X the cable diameter.
- Class A Equipment (broadcasting and communication equipment for office work): Seller and user shall be notified that this equipment is suitable for electromagnetic equipment for office work (Class A) and can be used outside the home.
- This device should be used in accordance with the instructions in this manual.

Specifications

The following sections list general specifications for the In-Sight vision system.

Vision System Specifications

Table 1-1: Vision System Specifications

Specifications	In-Sight 7010/7020/7050/7200/ 7210/7230/7400/7410/7430	In-Sight 7010C/7200C/7400C	In-Sight 7402/7412/7432	In-Sight 7402C
Minimum Firmware Requirement	In-Sight Version 4.7.1/4.7.3[1]	In-Sight Version 4.8.0	In-Sight Version 4.7.1/4.7.3[1]	In-Sight Version 4.8.0
Job/Program Memory	512MB non-volatile flash memory; unlimited storage via remote network device.			
Image Processing Memory	256MB SDRAM			
Sensor Type	1/1.8-inch CMOS			
Sensor Properties	5.3mm diagonal, 5.3 x 5.3µm sq. pixels		8.7mm diagonal, 5.3 x 5.3µm sq. pixels	
Resolution (pixels)	800 x 600		1280 x 1024	
Electronic Shutter Speed	16µs to 950ms			
Acquisition	Rapid reset, progressive scan, full-frame integration.			
Bit Depth	256 grey levels (8 bits/pixel).	24-bit color.	256 grey levels (8 bits/pixel).	24-bit color.
Image Gain/Offset	Controlled by software.			
Frames Per Second[2]	102 full frames per second.	50 full frames per second.	60 full frames per second.	30 full frames per second.
Lens Type	M12 or C-Mount.			
Image Sensor Alignment Variability[3]	±0.127mm (0.005in), (both x and y) from lens C-Mount axis to center of imager.			
Trigger	1 opto-isolated, acquisition trigger input. Remote software commands via Ethernet and RS-232C.			
Discrete Inputs	3 general-purpose inputs when connected to the Power and I/O Breakout cable. (Eight additional inputs available when using the optional CIO-MICRO or CIO-MICRO-CC I/O module.)			
Discrete Outputs	4 high-speed outputs when connected to the Power and I/O Breakout cable. (Eight additional outputs available when using the optional CIO-MICRO or CIO-MICRO-CC I/O module.)			
Status LEDs	Network link and activity, power and 2 user-configurable.			
Internal LED Ring Light	Red, Green, Blue, White, IR (M12 lens configuration only).			
Network Communication	Ethernet port, 10/100 BaseT with auto MDI/MDIX. IEEE 802.3 TCP/IP protocol. Supports DHCP (factory default), static and link-local IP address configuration.			
Serial Communication	RS-232C: 4800 to 115,200 baud rates.			

[1] Firmware version 4.7.1 is the minimum firmware requirement for models with the C-Mount Lens configuration. Firmware version 4.7.3 is the minimum firmware requirement for models with the M12 Lens configuration.

[2] Maximum frames per second is job-dependent, based on the minimum exposure for a full image frame capture using the dedicated acquisition trigger, and assumes there is no user interface connection to the vision system.

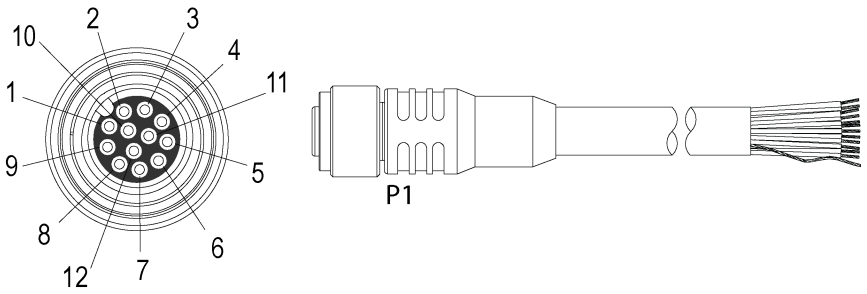
[3] Expected variability in the physical position of the image sensor, from vision system-to-vision system. This equates to ~ ±24 pixels on a 800 x 600 resolution CMOS and a 1280 x 1024 resolution CMOS.

Specifications	In-Sight 7010/7020/7050/7200/ 7210/7230/7400/7410/7430	In-Sight 7010C/7200C/7400C	In-Sight 7402/7412/7432	In-Sight 7402C
Power Consumption	24VDC ±10%, 2.0 amp. External light output 24V, 500mA Max.			
Material	Aluminum housing.			
Finish	Painted.			
Mounting	Four M3 threaded mounting holes (1/4 - 20, M6 and flathead mounting holes also available on mounting bracket).			
M12 Lens Configuration Dimensions	55mm (2.17in) x 84.8mm (3.34in) x 55mm (2.17in)			
C-Mount Lens Configuration Dimensions	75mm (2.95in) to 83mm (3.27in) x 84.8mm (3.34in) x 55mm (2.17in) with lens cover installed.			
	42.7mm (1.68in) x 84.8mm (3.34in) x 55mm (2.17in) without lens cover installed.			
Weight	220 g (7.8 oz.) with lens cover and typical M12 lens installed.			
Operating Temperature	0°C to 45°C (32°F to 113°F)			
Storage Temperature	-30°C to 80°C (-22°F to 176°F)			
Humidity	90%, non-condensing (Operating and Storage)			
Protection	IP67 with lens cover properly installed.			
Shock	80 G Shock per IEC 60068-2-27.			
Vibration	10 G from 10-500 Hz with 150 grams lens per IEC 60068-2-6.			
Regulatory Compliance	CE, FCC, KCC, TÜV SÜD NRTL, RoHS			

Power and I/O Breakout Cable Specifications

The Power and I/O Breakout cable provides connections to an external power supply, the acquisition trigger input, general-purpose inputs, high-speed outputs, and RS-232 serial communications. The Power and I/O Breakout cable is not terminated.

Table 1-2: Power and I/O Breakout Cable Pin-Out



Pin#	Signal Name (I/O Mode)	Wire Color
1	IN 2	Yellow
2	IN 3	White/Yellow
3	HS OUT 2	Brown
4	HS OUT 3	White/Brown
5	IN 1/ RS-232 RECEIVE[1]	Violet
6	INPUT COMMON	White/Violet
7	+24VDC	Red
8	GROUND	Black
9	OUTPUT COMMON	Green
10	TRIGGER	Orange
11	HS OUT 0	Blue
12	HS OUT 1/ RS-232 TRANSMIT[2]	Grey
Shell	SHIELD	Bare Wire

Note:

- Cables are sold separately.
- Unused bare wires can be clipped short or tied back using a tie made of non-conductive material. Keep all bare wires separated from the +24VDC wire.

P/N 597-0145-01 Rev.B
Printed in the USA

[1] If hardware handshaking is required, an I/O module must be used.

[2] If hardware handshaking is required, an I/O module must be used.